

## Edge effects on foraging guilds of upperstory birds in an isolated tropical rainforest of Malaysia

### ABSTRACT

The forest edge is the boundary between the forest area and the surrounding landscape. In this study forest edge is surrounded landscape which encompass of housing societies, highway, sports complex and equestrian park. Edge may directly or indirectly affect bird species in forest habitats because of various microclimate conditions (i.e., sunlight, wind, temperature, relative humidity) and microhabitat factors (i.e., vegetation species composition, structure and food resources). However, little information is available on the effects of edge on tropical forest birds. This study was conducted in an isolated tropical rainforest from March 2010 to June 2011 using a distance sampling point count technique to examine edge effects on the foraging guilds of upperstory bird species. In total, 1,618 individuals representing 61 upperstory bird species were detected. The analysis of feeding guilds indicated that sallying insectivores ( $F_6 = 22.95$ ,  $P < 0.001$ ), arboreal foliage-gleaning frugivores ( $F_6 = 3.87$ ,  $P < 0.001$ ) and arboreal foliage-gleaning insectivore/frugivores ( $F_6 = 4.42$ ,  $P < 0.001$ ) showed a significant difference in habitat selection at different distances from the edge to the interior of the forest. This finding shows that changes in the micro-environment have a significant effect on the distribution and richness of upperstory birds. This study demonstrated that the large-sized upperstory bird species, such as barbets, broadbills and malkohas tend to forage at the forest interior and infrequently observed at the forest edge. The study also showed that the upperstory bird species were influenced by the forest edge due to factors related to microclimate. However, the response of upperstory bird species may vary from species to species and from the forest edge to the interior. The birds selected specific microhabitat and microclimate characteristics that offered optimal food, shelter and breeding sites.

**Keyword:** Upperstory birds; Feeding guild; Micro environmental variables; Forest edge; Forest interior